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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,704	01/02/2004	Yoshihide Hoshino	KOY-0031	4100
23413	7590	05/31/2007	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			MRUK, GEOFFREY S	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/750,704	Applicant(s) HOSHINO ET AL.	
	Examiner Geoffrey Mruk	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al. (US 6,523,948 B2) in view of Ohta et al. (US 6,211,265 B1).

With respect to claim 1, Matsumoto discloses a liquid jetting apparatus (Fig. 1, element 9) comprising:

- a head (Fig. 16A, element 131) for jetting a liquid of photo curable type which is cured by an irradiation with light (Column 14, lines 39-43) ;
- a light source (Fig. 19, element 152) for irradiating the liquid of photo curable type jetted on an object from the head;
- at least one of a temperature sensor (Fig. 1, element S1) for detecting a temperature adjacent to the object (Column 12, lines 29-30), and
- a humidity sensor (Fig. 1, element S2) for detecting a humidity adjacent to the object (Column 12, lines 29-30); and
- a control section (Fig. 1, element 31) for controlling an illumination of light which is radiated from the light source (Column 12, lines 30-34),
- wherein the control section controls the illumination (Column 14, lines 45-49, i.e. intensity adjustor) on the basis of a result detected by at least one of the

temperature sensor and the humidity sensor (Column 12, lines 25-39), the light comprises an ultraviolet ray (Fig. 19, element 157).

With respect to claim 2, Matsumoto discloses the control section (Fig. 1, element 31) stores a relationship between at least one of a temperature (Fig. 1, element S1) and a humidity (Fig. 1, element S2), and

- a liquid cure necessary illumination value of light necessary for curing the liquid corresponding to at least one of a humidity and a temperature as a first data table (Fig. 8, element 63c; Column 12, lines 25-39),
- the control section specifying the liquid cure necessary illumination value from the first data table (Fig. 8, element 63a) on the basis of the result to control the illumination for turning the light source on to make the illumination be not less than the liquid cure necessary illumination value (Column 8, lines 40-54).

With respect to claim 3, Matsumoto discloses an illumination detection sensor (Fig. 19, element 160) for detecting the illumination (Column 14, lines 52-56),

- wherein the control section (Fig. 1, element 31) stores a second data table (Fig. 8, element 63d) in which an illumination value obtained by irradiation with light radiated from the light source is divided into a plurality of illumination levels (Fig. 19, element 161), and
- the control section rewrites (Column 12, lines 34-39) illumination values corresponding to each of the illumination levels in the second data table on the basis of a result detected by the illumination detection sensor (Fig. 8, element 63c), selects an illumination level having an illumination value not less than the

liquid cure necessary illumination value, and controls the illumination for turning the light source on to make the illumination be the illumination value of the illumination level selected (Column 12, lines 10-24).

With respect to claim 4, Matsumoto discloses the liquid jetting apparatus (Fig. 1, element 9) comprises

- a plurality of light sources (Fig. 16A, element 130), and the control section (Fig. 8, element 31) judges whether the liquid cure necessary illumination value exceeds an upper limit of the illumination value obtained by irradiation with light radiated from the light source (Column 2, lines 37-41), and
- when the control section judges that the liquid cure necessary illumination value specified exceeds the upper limit, the control section turns on the other light source different from the light source to make a total value of illuminations of light from the light source and the other light source exceed the liquid cure necessary illumination value (Column 8, lines 16-25).

With respect to claim 5, Matsumoto discloses the liquid jetting apparatus of claim 2, further comprising

- a spare light source (Column 14, lines 21-34) other than the light source for irradiating the liquid jetted on the object from the head with light (Column 13, lines 36-41),
- wherein the control section (Fig. 1, element 31) judges whether the liquid cure necessary illumination value exceeds an upper limit of the illumination value obtained by irradiation with light radiated from the light source, and

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- when the control section judges that the liquid cure necessary illumination value specified exceeds the upper limit, the control section controls the spare light source to turn on (Column 13, lines 53-55).

With respect to claim 6, Matsumoto discloses the liquid cure necessary illumination value rises as a humidity (Fig. 1, element S2) becomes high in the first data table (Fig. 8, element 63c; Column 12, lines 25-39).

With respect to claim 7, Matsumoto discloses the liquid cure necessary illumination value corresponds to both a temperature (Fig. 1, element S1) and a humidity (Fig. 1, element S2) in the first data table (Fig. 8, element 63c; Column 12, lines 25-39).

With respect to claim 8, Matsumoto discloses the liquid cure necessary illumination value depends (Column 2, lines 37-41) upon a type of the liquid in the first data table (Column 15, lines 10-22).

With respect to claim 9, Matsumoto discloses the object comprises a recording medium (Fig. 1, element 17), and the liquid comprises an ink having a color material as a composition (Column 15, lines 40-42).

With respect to claim 12, Matsumoto discloses a liquid jetting apparatus (Fig. 1, element 9) comprising:

- a head (Fig. 16A, element 131) for jetting a liquid of photo curable type which is cured by an irradiation with light (Column 14, lines 39-43);
- a light source (Fig. 19, element 152) for irradiating the liquid of photo curable type jetted on an object from the head;

- a humidity sensor for detecting a humidity (Fig. 1, element S2) adjacent to the object (Column 12, lines 29-30); and
- a control section (Fig. 1, element 31) for controlling an illumination of light which is radiated from the light source, wherein the control section controls the illumination on the basis of a result detected by the humidity sensor (Column 14, lines 45-49, i.e. intensity adjustor), the light comprises an ultraviolet ray (Fig. 19, element 157).

However, Matsumoto fails to disclose the liquid comprises a cationic polymerization ink containing a cationic polymerizing compound as a composition.

Ohta discloses a water base ink set for ink jet recording where "The inks of the ink set according to the present invention contains a water-soluble cationic polymer having a primary amino group in its molecule" (Column 4, lines 21-23).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the water based ink set disclosed by Ohta in the ink jet printer disclosed by Matsumoto. The motivation for doing so would have been "It is considered that realization of this waterfastness is derived from the fact that the water-soluble cationic polymer has high affinity for cellulose fibers of the recording paper and consequently functions as a binder for fixing the colorant onto the recording paper" (Column 4, lines 28-31).

Response to Arguments

Applicant's arguments filed 8 March 2007 have been fully considered but they are not persuasive. The applicant's argument that "However, intensity, adjustor 160 does not control the UV emitting laser unit based on a temperature sensor or a humidity sensor, as claimed in claims 1 and 12" and "It is respectfully important to note that Matsumoto never discloses that intensity adjustor 160 controls illumination of ultraviolet light on the basis of a result detected by a temperature sensor or a humidity sensor, as claimed in claims 1 and 12" are not persuasive.

As stated in the non-final rejection Matsumoto discloses, "drying speed correlated with environmental temperature or humidity may be previously obtained in view of conditions of placing the ink jet printer, so as to compensate for drive data of the heating elements. As illustrated in FIG. 1, a temperature sensor S1 and a humidity sensor S2 are provided in the ink jet printer. Output signals from the sensors S1 and S2 are input to the system controller 31. Then the drive data compensator 68 in the system controller 31 in FIG. 8 compensates for drive data to be applied to the heating elements according to the output signals. Note that, instead of compensating for the drive data, it is possible to consider the environmental temperature and humidity, previously obtain relationships between image data and drive data for the heating elements, and write those to the LUT 63c." (Column 12, lines 25-39).

Matsumoto discloses another embodiment where "An ultraviolet emitting laser unit (UVL) 152 as ultraviolet ray emitter unit is disposed instead of the IRLDs 130 of FIG. 16, and extends in parallel with an array of nozzles 153 in an ink jet head 154.

After recording material 155 is provided with an image by the ink jet head 154, the ultraviolet emitting laser unit 152 is controlled by an ultraviolet intensity adjustor 160 or control unit for intensity of ultraviolet rays 157 according to an ejected amount of an ink droplet 156, which is cured or hardened by the ultraviolet rays 157. This control with the ejected amount is effective in efficiently curing the ink droplet 156" (Column 14, lines 40-50).

The embodiment where the intensity of the ultraviolet emitting laser is adjusted by the amount of ink ejected does not eliminate the embodiment where adjustments based on temperature and humidity are made to the heating elements. Since Matsumoto states "An ultraviolet emitting laser unit (UVL) 152 as ultraviolet ray emitter unit is disposed instead of the IRLDs 130 of FIG. 16" (Column 14, lines 40-42), Matsumoto meets the claimed limitations.

The applicant's argument that "Ohta does not disclose nor suggest any cationic polymerization ink for ink-jetting, as claimed in claims 1 and 12, in which inhibition of polymerization occurs in the presence of water", is not persuasive. The examiner notes that applicant's definition of "polymerizing compound" is defined as "Specifically, the ink used in the embodiment is photo curable ink having a property of being cured by the irradiation with UV-rays as light. As the main component of the ink, at least polymerizing compound (publicly known polymerizing compounds are included.), photo initiator and color material are included. However, when the ink which is adapted to the above described "Photo-Induced Alternating Copolymerization (Section 2)" is used in the embodiment, the photo initiator may be excluded. The above described photo

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curable ink is classified into radical polymerization ink containing radical polymerizing compound and cationic polymerization ink containing cationic polymerizing compound, and both of them are adaptable as the ink to be used in the embodiment. Hybrid ink in which the radical polymerization ink and the cationic polymerization ink are combined may also be applied" (paragraphs 0064-0065). Since Ohta discloses a water-soluble cationic polymer (Column 4, lines 21-32), Ohta meets the claimed limitations.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

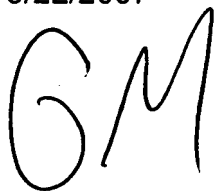
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on IFP.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GSM
5/22/2007



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